

AMENDMENTS TO THE CLAIMS

This Listing of Claims will replace all prior versions, including listings, of claims in the application.

Listing of Claims

Claim 1 (currently amended): A method of ~~identifying~~ detecting the presence of ~~a transgene~~ of a genetically modified organism in a sample wherein ~~the~~ a nucleic acid of ~~the~~ a transgene present in the genetically modified organism is replicated and detected as the release of pyrophosphate (PPi), the method comprising :

adding an oligonucleotide primer to the sample which hybridizes to the transgene;

subjecting the sample nucleic acid and primer to a polymerase reaction in the presence of a mixture of deoxynucleotides required for replication of the transgene whereby the deoxynucleotides are incorporated and release PPi proportional to the length of the DNA extension product; and

detecting any release of PPi enzymatically;

wherein release of PPi indicates the presence of the transgene and thereby the presence of the genetically modified organism.

Claim 2 (previously presented): The method of claim 1, wherein the transgene is replicated in a reaction selected from the group consisting of a polymerase extension reaction, a polymerase chain reaction (PCR), a ligase chain reaction (LCR), a rolling circle replication reaction (RCR) and a nucleic acid sequence based amplification reaction (NASBA).

Claim 3 (previously presented): The method of claim 2 wherein the transgene is replicated in a polymerase chain reaction.

Claim 4 (previously presented): The method of claim 1, wherein the release of PPi is detected by means of a Luciferase-Luciferin-based reaction.

Claim 5 (previously presented): The method of claim 1, wherein PPi release is detected using ATP sulfurylase and luciferase.

Claim 6 (previously presented): The method of claim 1, wherein the PPi detection enzymes are included in the polymerase reaction step and the polymerase reaction and PPi release detection steps are performed substantially simultaneously.

Claim 7 (previously presented): The method of claim 1, further comprising adding a dATP analogue which is capable of acting as a substrate for a polymerase, but incapable of acting as a substrate for a PPi detection enzyme.

Claim 8 (currently amended): The method of claim 7, wherein the dATP analogue is ~~deoxyadenosine. alpha. thiotriphosphate~~ deoxyadenosine- α -thiotriphosphate.

Claim 9 (currently amended): The method of claim 1, wherein the sample ~~DNA~~ nucleic acid or oligonucleotide primer is immobilized or provided with means for attachment to a solid support.

Claim 10 (currently amended): The method of claim 1, for use with a multiplicity of sample ~~DNA~~ nucleic acid sequences, wherein said ~~DNA~~ nucleic acid sequences are arranged in assay format on a solid surface.

Claim 11 (previously presented): The method of claim 1, wherein said nucleic acid sample is from a plant.

Claim 12 (previously presented): The method of claim 11 wherein the plant is a food source.

Claim 13 (currently amended): A kit for detecting the presence of ~~a transgene~~ of a genetically modified organism in a sample as defined in claim 1, comprising:

a polymerase;

an enzyme detection means for identifying PPi release;

deoxynucleotides, or optionally deoxynucleotide analogues, optionally including, in place of dATP, a dATP analogue which is capable of acting as a substrate for a polymerase but incapable of acting as a substrate for a PPi-detection enzyme; and

optionally a transgene specific primer which hybridizes to the ~~transgenic DNA~~ transgene and is recognized as a primer by a polymerase, wherein the polymerase replicates the ~~transgenic DNA~~ transgene.

Claim 14 (previously presented): The kit of claim 13, wherein the detection enzyme means comprises luciferin and luciferase.

Claim 15 (previously presented): The kit of claim 14, wherein the detection enzyme means comprises ATP sulfurylase and luciferase.

Claim 16 (previously presented): The kit of claim 13, wherein the transgene specific primer hybridizes to a transgene that provides herbicide resistance.

Claim 17 (previously presented): The kit of claim 16, wherein the transgene specific primer hybridizes to a transgene that provides resistance to the herbicides selected from glyphosate and glufosinate.

Claim 18 (previously presented): The kit of claim 13, wherein the transgene specific primer hybridizes to a transgene that provides insect resistance.

Claim 19 (previously presented): The kit of claim 13, wherein the transgene specific primer is selected from SEQ ID NOS. 1 to 29.

Claim 20 (previously presented): The method of claim 1, wherein the oligonucleotide primer is selected from SEQ ID NOS. 1-29.

Claim 21 (currently amended): A method of detecting ~~a transgene of~~ a genetically modified organism in a sample that may contain nucleic acid from the genetically modified organism wherein the nucleic acid of ~~the~~ a transgene present in the genetically modified organism is replicated and detected as release of pyrophosphate, the method comprising:

- adding an oligonucleotide primer selected from SEQ ID NOS. 1 to 29 to the sample;
- subjecting the sample to a polymerase reaction; and
- detecting the release of PPi;

wherein the release of PPi indicates the presence of a transgene in the sample and thereby the presence of the genetically modified organism.